

REMARKS

Claims 1-32 are pending in the application.

Claims 1-11 are allowed.

Claims 12-18, 21-23, 25-28 and 30-32 have been rejected.

Claims 19, 20, 24, and 29 are objected to as depending from a rejected claim.

Claims 6 and 22 have been amended to correct minor informalities.

No new matter has been added.

Reconsideration of the Claims is respectfully requested.

1. Rejection under Section 103

(a) Claims 12, 17, 22-23, 25-27 and 31 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,330,290 to Glas ("Glas") in view of U.S. Published Application No. 2002/0097812 to Wiss ("Wiss"), and further in view of U.S. Patent No. 5,848,099 to Benner ("Benner").

(b) Claims 13-16, 30 and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Glas, Wiss, and Benner, and further in view of U.S. Published Application No. 2003/0206603 to Husted ("Husted").

(c) Claims 18, 21 and 28 were rejected under 35 U.S.C. 103(a) as being unpatentable over Glas, Wiss, and Benner, and further in view of U.S. Patent No. 5,249,203 to Loper ("Loper").

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. MPEP § 2142, p. 2100-125 (Rev. 5, August 2006) (citations omitted).

Glas relates to "a compensation arrangement that overcomes the phase and amplitude imbalances caused by the local oscillator employed in the receiver." (Glas 2:30-32). The compensation unit 102 of Glas "is configured to multiply the output signal provided by A-D converter 27 by a factor β ." (Glas 5:53-55). Glas does not, as acknowledged in the Office Action, recite orthogonal-normalizing module. (*see* Office Action at p. 3).

Wiss relates to “rebalancing in the digital domain the I and Q (in-phase and quadrature-phase respectively) components of an *incoming signal*.” (Wiss ¶ 0001). Similarly, Glas and Wiss were acknowledged in the Office Action as not reciting the orthogonal-normalizing module as set out in Applicant’s claimed invention. (*see* Office Action at p. 4).

Benner relates to “test methods and systems for QPSK *radio receivers*.” (Benner 1:6-10). The tests appear to discern the transmission characteristics of a radio receiver – for example, “the receiver 12 must have a phase imbalance in magnitude no greater than 8 degrees to meet specification requirements.” (Benner 7:62-64). Accordingly, Benner does not appear related to the recapturing of inbound data, but to observe QPSK receiver performance.

In contrast to the cited references, Applicant’s Independent Claim 12 recites, *inter alia*, a “radio frequency integrated circuit (RFIC) comprises: . . . orthogonal-normalizing module including: an *in-phase power module* operably coupled to determine power of the baseband in-phase components; a *quadrature power module* operably coupled to determine power of the quadrature components; a *cross-correlation power module* operably coupled to determine a cross-correlation power based on the baseband in-phase and quadrature components; and *normalizing module* operably coupled to normalize the baseband in-phase components and the baseband quadrature components *based on* the power of the baseband in-phase components, the power of the baseband quadrature components, and the cross-correlation power to produce normalized in-phase components and normalized quadrature components; and baseband processor operably coupled *to recapture the inbound data from the normalized in-phase and quadrature components*.” (emphasis added).

Applicant’s Independent Claim 17 recites, *inter alia*, a “radio frequency integrated circuit (RFIC) comprises: *receiver section . . . ; transmitter section . . .* wherein the transmitter section includes: baseband processor operably coupled to convert the outbound data into the baseband in-phase components and baseband quadrature components; orthogonal-normalizing module operably coupled to: obtain *a first coefficient* that is based on at least one of a gain imbalance and phase imbalance; obtain *a second coefficient* that is based on at least one of the gain imbalance and the phase imbalance; *normalize an orthogonal relationship between the baseband in-phase components and the baseband quadrature components* based on the first coefficient and the second coefficient to produce normalized in-phase components and normalized quadrature components; . . .” (emphasis added).

Applicant's Independent Claim 27 recites, *inter alia*, a “method for orthogonal normalization of a radio frequency integrated circuit (RFIC), the method comprises: determining phase imbalance and gain imbalance of a transmitter section of the RFIC; *normalizing baseband in-phase components and baseband quadrature components of the transmitter section* based on the phase imbalance and the gain imbalance of the transmitter section; coupling the transmitter section to a receiver section of the RFIC in a loop back configuration; *providing a test signal from the transmitter section to the receiver section*; determining power of baseband in-phase components, power of baseband quadrature components, and cross-correlation between the baseband in-phase components and the baseband quadrature components of the receiver section while processing the test signal; and *normalizing the baseband in-phase components and the baseband quadrature components of the receiver section based on the power of the baseband in-phase components, the power of the baseband quadrature components, and the cross-correlation between the baseband in-phase components and the baseband quadrature components.*” (emphasis added).

Loper relates to a “system for controlling phase and gain errors resulting from mismatches between signal channels in a *direct conversion receiver . . .*” (Loper 3:5-8). The direct conversion receiver of Loper determine “phase and gain errors . . . in adjusting the Q baseband component in order to correct the relationship between the original I and Q components and provide I and Q baseband component signals substantially free from . . . errors . . .” (Loper 3:39-45).

Husted relates to “passive I/Q imbalance or mismatch calibration and techniques in order to, for example, prevent and limit quadrature receiver performance degradation due to magnitude and phase mismatch between in-phase and quadrature channels of the *quadrature receiver.*” (Husted ¶ 0006).

Applicant respectfully submits that any suggestion or motivation for the hypothetical combination of Glas, Wiss, and Benner stems from its own specification. An Applicant's specification, however, may not be used to establish a showing of *prima facie* obviousness.

The Federal Circuit has noted that “an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner

to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be ‘an illogical and inappropriate process by which to determine patentability.’” *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998) (quoting *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570, 38 USPQ2d 1551, 1554 (Fed. Cir. 1996)).

Accordingly, to “prevent the use of hindsight based on the invention to defeat patentability of the invention, [the Federal Circuit] requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.” *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998).

The Office Action generally looks to Applicant’s claimed invention, and then points to elements within these disparate references. For example, the Office Action recites that by “taking the combined teachings of Glas and Wiss as a whole, it would have been obvious to one of ordinary skill in the art to have incorporated these steps into the system of Glas, in the manner as claimed and as taught by Wiss, for the benefit of providing imbalance compensation.” (*see* Office Action at p. 4). Subsequently, Benner is pointed to as determining cross-correlation power. (*Id.*). Lacking, however, is the necessary suggestion or motivation originating from within these cited references to achieve Applicant’s claimed invention.

Accordingly, Applicant respectfully submits that a *prima facie* case of obviousness has not been established. There is no suggestion or motivation for the hypothetical combination of the phase/amplitude imbalance device of Glas, with the received signal rebalance device of Wiss, and further with the QPSK radio receiver tester of Benner to achieve Applicant’s claimed invention of Independent Claim 12 and claims 13-16 that depend therefrom, of Independent Claim 17 and claims 18-26 that depend directly or indirectly therefrom, and of Independent Claim 27 and claims 28-32 that depend therefrom.

2. Allowed & Allowable Subject Matter

Applicant notes with appreciation the allowance of its Claims 1-11.

Claims 19-20, 24 and 29 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant notes with appreciation this indication of allowability.

3. Conclusion

As a result of the foregoing, the Applicant respectfully submits that Claims 12-32, in addition to allowed claims 1-11, are in condition for allowance, and respectfully requests an early allowance of such Claims.

If any issues arise, or if the Examiner has any suggestions for expediting allowance of this Application, the Applicant respectfully invites the Examiner to contact the undersigned at the telephone number indicated below or at ksmith@texaspatents.com.

The Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Garlick Harrison & Markison Deposit Account No. 50-2126.

Respectfully submitted,

Date: July 3, 2007

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